

Terms of reference (ToRs)

Tender for hiring a consultant for Capacity building on “Solar RooftopProject number/
testing and Inspection” through virtual classroom for the State Discoms ofcost centre:
Gujarat **14.2298.9-003.00**

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1. Context

The target of the National Solar Mission is an installed capacity of 40,000 MW of rooftop solar photovoltaic by 2022. The official statistics of the MNRE show that the currently installed capacity is around 2,800 MW. The State Governments and the respective electricity regulatory commissions have announced suitable policy and regulatory framework for promotion of rooftop solar photovoltaic systems. Despite all that the growth in the solar rooftop sector has been sluggish. To provide impetus to the RTPV sector development, MNRE and some States have recently announced new subsidy schemes.

MNRE has recently announced the Phase-II of the grid connected solar rooftop PV scheme where the subsidy is available only for the domestic category consumers and the beneficiaries will be given subsidy of 40% up to 3KW and subsidy of 20% for system of 3 to 10 KW. This new scheme is being implemented through the State power distribution companies and the State Discoms.

Gujarat is leading State in implementation of MNRE Rooftop Phase 2 scheme. A lot of subsidized installation requests are received on Discom Portal each day. To successfully contribute in reducing the CO2 emissions, these new installations must be of standardized quality and should last their project life. MNRE has also highlighted the importance of quality installations. As highlighted in kW-to-kWh (<https://kwtokwh.in/>) study conducted by GIZ quality of these installations must be ensured for long project life and efficient operation. This requires inspection and testing of the new installations before commissioning. GUVNL is implementing a quality check mechanism for associated installers and wants to create a pool of certified engineers who can perform inspection and testing while commissioning of the rooftop solar system. GUVNL has requested GIZ to develop a capacity building program which will empower Discom engineers to conduct solar rooftop inspection and testing before releasing the subsidy.

German Development Cooperation (GIZ) in partnership with Ministry of New and Renewable Energy (MNRE) is implementing Indo-German Solar partnership project (IGSP). Under IGSP, the key objective is to support the installation of the solar rooftop PV systems across the States allocated to GIZ by MNRE. Under this ToR GIZ aims to develop training content on the topic "Solar Rooftop testing and Inspection" and virtually/digitally deliver eight trainings in the state of Gujarat

2. Tasks to be performed by the contractor

The objective of this assignment is to develop training content on the topic "Solar Rooftop testing and Inspection" and virtually/digitally deliver up to eight trainings in the State of Gujarat. Participants for this training will be DISCOM Engineers. The Consultant is responsible for providing the following services:

Task 1: Training content development

- a. Table containing the list of topics identified for this training is shown below -

Sr.no.	Topic	Activity
1	Intro to PV Technology and type of Modules	
2	PV Module and string design	Module technical behaviour (I-V curves, flash reports, MPP tracking), Introduction to inverter technology and string design, function of DC junction boxes.
3	PV module quality	Module quality inspection based on latest standards, shading analysis and referring special arrangement of PV modules on the roof
4	PV string and Inverter design (DC Part) and Structure quality check	Case study – ask participants to analyse inverters DC input parameters and size of PV array accordingly. Some case studies to demonstrate structure quality checks and importance of using wiring enclosures and glands.
5	Electrical design of PV Plants	Participants will be working with a real single line diagram of 3-10kw rooftop plant
6	Electrical protection of PV Plants	Participants will understand various fault scenarios for electrical faults on DC and AC side. Introduction to measures of electrical protection on DC and AC side.
7	Connection to the Grid	Connection principles and load flow, differences between evacuation in LT and HT, Gujarat Net-metering Guidelines
8	PV string and inverter design (AC Part)	Participants will understand DC to AC ratio and the implications for plant design and overall cost
9	Energy Yield Assessment	Solar resource evaluation, Introduction to energy yield estimation software (PV syst), concepts of CUF, PR, yield estimation using the Performance Ratio concept based on new standards – 61724 Second edition, plant health vs plant management
10	Instruments for testing and Inspection	List of instruments is available under Task 2
11	Testing and Commissioning	Participants will be able to apply IEC 52445 for testing and commissioning in theory and practise.

- b. Conduct a review meeting with GUVNL officials to review the training topics mentioned above. Specific training topics suggested by GUVNL and GIZ should be added in training content.
- c. Training content must cover all the finalised topics with adequate information on the topic so that the aim of this project is achieved.
- d. Training content has to be developed in digital format. It could be a combination of slides, pictures, videos, animations, etc. Training content can be in English language.
- e. Final training content has to be submitted to GIZ for approval.
- f. Plagiarism of the training content should not exceed 15%.

Task 2: Delivery of Training program

- a. Eight virtual training programs to be digitally/virtually delivered for Discom Engineers.
- b. Training content must be delivered within 20-30 hours of virtual trainings spread across 5-7 Days.
- c. Software/platform used for training must be approved by GIZ and data protection and safety must be ensured by the consultant.
- d. Trainer must be able to adjust with the participants language as they are more comfortable with Gujarati
- e. The trainings shall be delivered in a way to clear all their doubts and concerns to the best possible level.
- f. Consultant must record at least one training program and submit to GIZ as one of the deliverable for the project.
- g. Consultant shall conduct an MCQ examination at end of the training program and issue certification of completion to participants on behalf of his organisation and signed by GUVNL.
- h. The consultant must rent/arrange the below mentioned tools related to testing and inspection, the tool usage has to be demonstrated to participants during the virtual live session.

Sr. No.	Name of Instrument	Make	Model	Purpose
1	Vernier Callipers	Mitutoyo, Japan	Mitutoyo 500 506 - 10 To 600mm Digimatic Vernier Caliper	Measuring of Panel Dimension for Efficiency measurement
2	Solar IV Curve Tracer	HT, Spain	HT IV 500 W	For IV curve
3	Coating Thickness Tester	ELCOMETER, UK		For measurement of coating of Galvanizing, Anodization etc.
4	PV solar power quality analyser	HT, Spain	HT SOLAR 300N	For power quality measurement and efficiency measurement etc
5	PV multiple parameter measurement device	Seaward, UK	Seaward PV200	PV array insulation test, Ground (earth) continuity Measurement with test lead, Automatic fill factor calculation, I-V curve tracing.
6	Shadow Analyzer	Solmetric, USA	SunEye 210	For shadow analysis
7	Thermal imaging camera	TESTO, Germany	TESTO 871	For faulty cell analysis and temperature measurement
8	Bypass Diode Tester	Hioki, Japan	Hioki FT4310 Bypass Diode Tester	Test for open or short-circuit bypass diodes

Certain milestones, as laid out in the table below, are to be achieved by certain dates during the contract term

Deliverables	Deadline/place/person responsible
Final Training curricular	2 weeks
Final Training content	8 weeks
Eight training programs	16 weeks

Period of assignment: From September 2020 until December 2020.

3. Concept

In the bid, the bidder is required to show how the objectives defined in Chapter 2 are to be achieved, if applicable under consideration of further specific method-related requirements (technical-methodological concept). In addition, the bidder must describe the project management system for service provision.

Technical-methodological concept

Strategy: The bidder is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see Chapter 1). Following this, the bidder presents and justifies the strategy with which it intends to provide the services for which it is responsible (see Chapter 2).

The bidder is required to present the actors relevant for the services for which it is responsible and describe the **cooperation** with them.

The bidder is required to present and explain its approach to **steering** the measures with the project partners and its contribution to the results-based monitoring system.

The bidder is required to describe the key **processes** for the services for which it is responsible and create a schedule that describes how the services according to Chapter 2 are to be provided. In particular, the bidder is required to describe the necessary work steps and, if applicable, take account of the milestones and contributions of other actors in accordance with Chapter 2.

The bidder is required to describe its contribution to knowledge management for the partner and GIZ and promote scaling-up effects (**learning and innovation**).

Other specific requirements

The consultant shall strive for gender equality in their proposed staff in the technical proposal.

Project management of the contractor

The bidder is required to explain its approach for coordination with the GIZ project.

- The contractor is responsible for selecting, preparing, training and steering the experts (national, short and long term) assigned to perform the advisory tasks.
- The contractor makes available equipment and supplies (consumables) and assumes the associated operating and administrative costs.
- The contractor manages costs and expenditures, accounting processes and invoicing in line with the requirements of GIZ.
The contractor reports regularly to GIZ in accordance with the AVB of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH from 2018

In derogation from GIZ AVB, the contractor makes contributions to reports to GIZ's commissioning party instead of submitting its own reports.

In addition to the reports required by GIZ in accordance with AVB, the contractor submits the following reports:

- Inception report
- Contributions to reports to GIZ's commissioning party
- Brief quarterly or half-yearly reports on the implementation status of the project (5-7 pages)

The bidder is required to draw up a **personnel assignment plan** with explanatory notes that lists all the experts proposed in the bid; the plan includes information on assignment dates (duration and expert days) and locations of the individual members of the team complete with the allocation of work steps as set out in the schedule.

4. Company Profile

To be eligible to participate in this tender, the consulting firm must have minimum 3 years of experience in the field of renewable energy consulting, training and installation in India, training content development and delivery for renewable energy and solar energy sector. The consultant shall meet the following minimum requirements and submit documentary evidence, the reference projects shall have value more than EUR 20000.

- i. Firm must have developed and delivered minimum 2 training program for solar energy in last 3 years
- ii. Firm must have minimum 1-year experience in virtual training.
- iii. Firm must have minimum 1-year experience of working with Gujarat Discom.
- iv. Firm must have minimum experience of 3 years in the field of renewable energy
- v. Average annual turnover of the firm for the last 3 years shall be at least EUR 90000

Number of employees as on 31.12.2019 shall be at least 10 persons.

5. Personnel concept

The bidder is required to provide personnel who are suited to filling the positions described, on the basis of their CVs (see Chapter 8), the range of tasks involved and the required qualifications.

The below specified qualifications represent the requirements to reach the maximum number of points.

Team leader

Tasks of the team leader

- Overall responsibility for the advisory package of the contractor
- Ensuring the coherence and complementarity of the services of the contractor with other services delivered by the programme
- Strategy, implementation, monitoring and evaluation of capacity development measures for local partners
- Consideration of cross-cutting themes (e.g. gender equality)
- Personnel management, in particular identifying the need for short-term assignments within the available budget, as well as planning and steering assignments and supporting local and international short-term experts
- Ensuring results monitoring is conducted
- Regular reporting in accordance with deadlines
- Responsibility for controlling the use of funds and financial planning in consultation with GIZ's officer responsible for the commission
- Supporting the officer responsible for the commission in updating/adapting the project strategy, in evaluations and in preparing a follow-on phase

Qualifications of the team leader

- Education/training (2.1.1): University qualification (Degree) in Engineering
- Language (2.1.2): Good business language skills in English, Hindi and Gujarati
- General professional experience (2.1.3): 10 years of professional experience in the Indian Energy sector in the field of renewable energy
- Specific professional experience (2.1.4): 5 years in professional/consulting experience in setting up solar rooftop plants
- Leadership/management experience (2.1.5): 6 years of management/leadership experience as project team leader or manager in a company
- Regional experience (2.1.6): 2 years of work experience in Gujarat
- Development Cooperation (DC) experience (2.1.7): 2 years of experience in DC projects

Expert 1: Solar Expert Trainer

Tasks of expert 1

- Development of Training content as per the finalised curricula
- Delivering the training content in a way to clear all their doubts and concerns of participants to the best possible level.

Qualifications of expert 1

- Education/training (2.2.1): University qualification (Degree) in Electrical Engineering
- Language (2.2.2): Good business language skills in English, Hindi and Gujarati
- General professional experience (2.2.3): 5 Years of experience in Indian Energy Sector
- Specific professional experience (2.2.4): 3 years' experience in solar training delivery
- Leadership/management experience (2.2.5): 2 years' experience in project management
- Regional experience (2.2.6): 2 years of experience in projects in Gujarat
- Development Cooperation (DC) experience (2.2.7): 2 years' experience in working with DC
- Other (2.2.8): Should be Skill Council for Green Jobs certified trainer.

Soft skills of team members

In addition to their specialist qualifications, the following qualifications are required of team members:

- Team skills
- Initiative
- Communication skills
- Sociocultural competence
- Efficient, partner- and client-focused working methods
- Interdisciplinary thinking

In addition to the above 2 positions, the bidder shall submit a pool of short-term experts as follows:

Short-term expert pool with minimum 1, maximum 4 members

Tasks of the short-term expert pool

- Managing the Virtual training platform operation
- Digitalisation of training content

Qualifications of the short-term expert pool

- Education/training (2.6.1): 1 expert with university qualification (degree) in engineering, 1 expert with university qualification (degree) in IT
- Language (2.6.2): 1 expert with very good language skills in English, Hindi and Gujarati
- General professional experience (2.6.3): 1 expert with at least 3 years' of experience in the Renewable Energy sector
- Specific professional experience (2.6.4): 1 expert with at least 2 years' of professional experience in the Online trainings
- Development Cooperation (DC) experience (2.6.6): 1 expert with at least 2 years of experience in DC

The bidder must provide a clear overview of all proposed short-term experts and their individual qualifications.

Other specific requirements

In case there are requirements/request from Discom for half day Face to face sessions during these eight trainings, the consultant shall be available for delivering the sessions within Gujarat. The costing for these sessions in regard to the logistics will be borne by GIZ.

6. Costing requirements

Assignment of personnel

Team leader: On-site assignment for 25 expert days

Solar Expert trainer: On-site assignment for 45 expert days

Short-term expert pool: total 75 expert days

Travel

The bidder is required to calculate the travel by the specified experts and the experts it has proposed based on the places of performance stipulated in Chapter 2 and list the expenses separately by daily allowance, accommodation expenses, flight costs and other travel expenses.

7. Inputs of GIZ or other actors

GIZ shall help in getting registration of Discom Engineers as participants for the training program.

8. Requirements on the format of the bid

The structure of the bid must correspond to the structure of the ToRs. In particular, the detailed structure of the concept (Chapter 3) is to be organised in accordance with the positively weighted criteria in the assessment grid (not with zero). It must be legible (font size 11 or larger) and clearly formulated. The bid is drawn up in English (language).

The complete bid shall not exceed 15 pages (excluding CVs and company documents as mentioned in grid for assessing eligibility of firms).

The CVs of the personnel proposed in accordance with Chapter 4 of the ToRs must be submitted using the format specified in the terms and conditions for application. The CVs shall not exceed 4 pages. The CVs must clearly show the position and job the proposed person held in the reference project and for how long.

If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment.

Please calculate your price bid based exactly on the aforementioned costing requirements. In the contract the contractor has no claim to fully exhaust the days/travel/workshops/ budgets. The number of days/travel/workshops and the budget amount shall be agreed in the contract as 'up to' amounts. The specifications for pricing are defined in the price schedule.

The option is exercised in the form of an extension to the contract based on the already offered individual rates.